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CONNECTICUT UNIV STORRS DEPT OF ELECTRICAL ENGINEERI--ETC F/6 9/2  
ADVANCED OPERATING SYSTEMS CONCEPTS FOR BMD APPLICATIONS.(U)  
JUN 82 E E BALKOVICH, D JORDAN

DAS660-79-C-0117  
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Advanced Operating Systems Concepts  
for BMD Applications

Final Report

BMD Systems Command

Project No. DAS G-60-79-C-<sup>0117</sup>~~0017~~ Mod. No. P00C02

by

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June 3, 1982

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## Introduction

→ This final report documents the work completed during this final phase of the project. Summarized are the key technical results and publications arising from the work. Personnel involved in the work and equipment purchased are described in later sections.

## 2. Technical Results

### 2.1 Objectives

The objectives of this project were two-fold. First, conceptual studies were to include:

identification of new operating system requirements to support distribution of BMD functions using the macropipeline concept

review of operating system concepts for shared memory architecture distributed computer systems.

And, second, the project was to design and develop operating system kernel concepts in the context of applying Z-8000 microcomputers with shared memories to BMD applications.

These studies have made use of concepts developed under a previous study, (Final Report, BMD Project DAS G-60-79-C-0017).

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### 2.2 Results

The key results of this work are reported in detail in the attached theses of Branimir Gajic and Debra Lane. In particular, Gajic's thesis treats primarily the final objective, while Lane's thesis evaluates models and performance data relative to the second objective. In addition, the attached thesis of Lawrence Cohen describes a communications subsystem developed to support this work.

### 2.3 Publications arising from this work are listed below:

#### Theses

"A Distributed Operating System for BMD Applications," Branimir Gajic, TR-CS-82-4.

"A Communications Subsystem Based on a CSMA/CD Channel", Lawrence S. Cohen, TR-CS-82-2.

"Models and Measurements of Parallelism for a Distributed Computer System", Debra S. Lane, TR-CS-82-1.

#### Papers/Conference Presentations

"Impact of Hardware Interconnection Structures on the Performance of Decentralized Software, R. J. Souza and E. E. Balkovich, 8th International Symposium on Computer Architecture, May 1981.

Performance of Distributed Software Implemented by a Contention Buffer, E. E.

Reports

Advanced Operating System Concepts for BMD Applications (DASG60-C-79-117) Progress Report, June 1981. E. E. Balkovich, Principal Investigator.

Performance Measurements of Logically Distributed Software, E. E. Balkovich and D. S. Lane, 1981.

3. Personnel

Persons employed under this contract have been:

Faculty

Edward E. Balkovich, Associate Professor and Principal Investigator

Bernard J. Carey, Associate Professor, Research Specialist

Graduate Students

|                |                    |
|----------------|--------------------|
| Lawrence Cohen | Graduate Assistant |
| Debra Lane     | Graduate Assistant |
| Branimir Gajic | Graduate Assistant |
| Robert Souza   | Graduate Assistant |
| J. A. Blom     | Graduate Assistant |
| Sue Zajac      | Graduate Assistant |
| S. Gulaya      | Graduate Assistant |

Secretary

J. C. Hayden

4. Equipment

In order to carry out the investigation described above the previously existing DEC based distributed computer system was enhanced and additional high level and local capability was added. The specific items purchased partially or in full under this contract were:

|   |            |
|---|------------|
| Hamilton Avnet, Danbury, CT               |            |
| BALL-NE 4x9 Mounting Box                  | \$1,458.00 |
| BALL-NE 4x4 Mounting Box                  | \$1,167.00 |
| MRV11-RE LSI-11/23 MMU, 96K bytes of RAM  | \$3,209.00 |
| 2 serial interfaces                       |            |
| RLV-11-AK RLO1 disk drive and Controller  | \$4,941.00 |
| BCV1B-06 Bus Expansion Option             | \$ 260.00  |
| DLV11-J 4 port serial interface           | \$ 814.00  |
| MXV11-AC Multifunction Module             |            |
| 32K bytes, RAM, 2 port serial interfaces  | \$ 729.00  |
| MXV11-A2 PROM bootstrap for RLV11 & RXV21 | \$ 44.00   |

\$12,622.00

Amount from contract funds

\$ 4,250.00

|                       |                                     |
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| NTIS GRA&I            | <input type="checkbox"/>            |
| DTIC TAB              | <input type="checkbox"/>            |
| Unannounced           | <input type="checkbox"/>            |
| Justification         | <i>102</i>                          |
| <i>FF-182 on file</i> |                                     |
| By                    |                                     |
| Distribution/         |                                     |
| Availability Codes    |                                     |
| Dist                  | Special                             |
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| Universal Data Systems, Framingham, MA         |            |                    |
| 300 baud modem                                 | \$ 195.00  |                    |
| Amount from contract funds                     |            | \$ 195.00          |
| Heathkit, Avon, CT                             |            |                    |
| Heathkit-H19, ASCII Video Terminal             | \$ 695.00  |                    |
| Amount from contract funds                     |            | \$ 695.00          |
| Digital Equipment Corp.                        |            |                    |
| RL0L-AK 5 mbyte removable cartridge disk drive | \$4,723.50 |                    |
| Amount from contract funds                     |            | \$ 823.50          |
| Sigma Sales, Inc.                              |            |                    |
| 1/2 megabyte memory for DEC 11-780 computer    | \$1,125.00 |                    |
| Amount from contract funds                     |            | \$ 1,125.00        |
| Total amount spent from contract funds         |            | <u>\$ 7,078.50</u> |